ITÄ-SUOMEN YLIOPISTO
LUONNONTIETEIDEN JA METSÄTIETEIDEN TIEDEKUNTA

Juha-Matti Aleksanteri Huusko

(200487-093K)

on suorittanut valtioneuvoston asetuksen 794/2004 mukaisen
filosofian maisterin tutkinnon aineenopettajan koulutuksessa.

	Opintopisteet	Arvosana
PÄÄAINE: MATEMATIIKKA		
Syventävät opinnot	72,0	*Kiitettävä*

Pääaineen opintoihin sisältyvä pro gradu -tutkielma on hyväksytty arvosanalla *kiitettävä*.

SIVUAINEET		
Fysiikka		
Aineopinnot	38,0	*Erinomainen*
Opettajan pedagogiset opinnot	35,0	*Erinomainen*
MUUT OPINNOT	57,0	
TUTKINNON KOKONAISLAAJUUS	202,0	

Tutkinnon suorittanut on osoittanut yliopistojen tutkinnoista annetun asetuksen (794/2004) mukaisen kielitaidon aiemmin suorittamassaan tutkinnossa.

Joensuussa, syyskuun 20. päivänä 2013
Luonnontieteiden ja metsätieteiden
tiedekunnan puolesta

TIMO JÄÄSKELÄINEN, DEKAANI

KAISA LAITINEN, HALLINTOPÄÄLLIKKÖ

Tähän tutkintotodistukseen kuuluu kaksi liitettä. Opintosuoritusotteessa esitetään tutkintoon kuuluvat opinnot ja kansainväliseen käyttöön tarkoitetussa Diploma Supplement -liitteessä tiedot yliopistosta sekä tutkintotodistuksessa tarkoitetuista opinnoista, niiden tasosta ja asemasta koulutusjärjestelmässä.

Juha-Matti Aleksanteri Huusko
Ahovaarantie 372
88900 KUHMO

Syntymäaika	20.04.1987
Opiskelijanumero	175783
Kirjoilletulo	01.08.2007

OPINTO-OIKEUDET

Myöntäjä	Luonnontieteiden ja metsätieteiden tiedekunta
Organisaatio	Fysiikka ja matematiikka (J)
Voimassaolo	01.08.2007 - 20.09.2013
Opintojen aloitus	16.02.2013
Tutkintoasetus	Valtioneuvoston asetus yliopistojen tutkinnoista n:o 794/2004
Tavoitetutkinto	Filosofian maisteri, luonnontieteet
Pääaine	Matematiikka
Suuntautuminen	Aineenopettaja
Sivuaine	Fysiikka Opettajan pedagogiset opinnot
Tutkinnon suorituspäivä	20.09.2013
Opinnäyte, syventävät opinnot	Bergmanin avaruuden funktioiden nollakohdista
Arvosana	Kiitettävä
Suorituspäivä	20.09.2013

Suoritukset ajalta: 14.04.2008 - 20.09.2013

OPINNOT		**OP**	**ARV**	**PVM**	**HYVÄKSYJÄ**
70287	Filosofian maisteri, luonnontieteet	202,00	HYV	20.09.2013	Luonnontieteiden ja metsätieteiden tiedekunta
0510	Matematiikka	72,00 *	4/5	20.09.2013	Risto Korhonen
3319140	Matematiikka (aineenopettaja, syventävät opinnot)	72,00	4/5	20.09.2013	Risto Korhonen
3317491	Pro gradu -tutkielma (matematiikka)	30,00	4/5	20.09.2013	Luonnontieteiden ja metsätieteiden tiedekunta
3317222	Matematiikan historia	4,00	5/5	12.05.2011	Heli Silvennoinen
3317242	Matematiikan havainnollistaminen ja kerhotoiminta	6,00	HYV	23.05.2011	Martti Pesonen
3317493	Maisterin tutkinnon kypsyysnäyte		HYV	18.09.2013	Jouni Rättyä
J180501	Analyysi IV	8,00	4/5	21.04.2010	Rauno Aulaskari
J180511	Geometria	8,00	4/5	15.05.2009	Visa Latvala
J180551	Koulumatematiikan harjoituskurssi	4,00	HYV	30.04.2010	Heli Silvennoinen
J180603	Kompleksianalyysi Ia	4,00	5/5	04.11.2009	Jouni Rättyä
J180604	Kompleksianalyysi Ib	4,00	3/5	16.12.2009	Jouni Rättyä

Juha-Matti Aleksanteri Huusko

Syntymäaika 20.04.1987
Opiskelijanumero 175783

OPINNOT		OP	ARV	PVM	HYVÄKSYJÄ
J180721	Matematiikan tietotekniikka kouluopetuksessa	4,00	HYV	25.03.2010	Heli Silvennoinen
0520	Fysiikka	38,00 *	5/5	30.08.2013	Markku Kuittinen
3314320	Fysiikan aineopinnot opettajille, sivuaine	38,00	5/5	30.08.2013	Markku Kuittinen
3311001	Aineopintojen laboratoriotyöt I	5,00	5/5	30.08.2013	Martti Mäkinen
3312034	SciFest-työpajakokonaisuuden suunnittelu ja toteutus	5,00	HYV	21.05.2012	Pekka Hirvonen
J190202	Sähkömagnetismi	7,00	5/5	15.05.2009	Markku Saarelainen
J190206	Fotoniikka	7,00	5/5	14.12.2009	Markku Kuittinen
J190301	Kvantti- ja atomifysiikka	6,00	5/5	21.12.2009	Pasi Vahimaa
J190404	Kokeellisen koulufysiikan kurssi	5,00	5/5	27.05.2009	Ville Nivalainen
J190541	Laboratoriotyöskentelyn perusteet opettajille	3,00	Hyv	16.02.2009	Pekka Hirvonen
2008	Opettajan pedagogiset opinnot	35,00 *	5/5	17.05.2013	Pertti Väisänen
2320560	AINEENOPETTAJAN PEDAGOGISET OPINNOT (35 op) A986/1998 tarkoittamat vähintään 60 opintopisteen laajuiset opettajan pedagogiset opinnot sisältyvät sekä alempaan että ylempään korkeakoulututkintoon.	35,00	5/5	17.05.2013	Pertti Väisänen
2320503	Opettajan ammatillinen vuorovaikutusosaaminen	3,00	HYV	05.12.2011	Kirsi Heikkinen-Jokilahti
2320505	Soveltava harjoittelu	4,00	HYV	07.02.2013	Kari Sormunen
2320506	Eheyttävä pedagogiikka	3,00	5/5	15.05.2013	Kari Sormunen
2510012	Perusharjoittelu	5,00	HYV	14.12.2012	Seija Jeskanen
2510022	Syventävä harjoittelu	8,00	HYV	17.05.2013	Seija Jeskanen
J312201	Pedagoginen etiikka	3,00	5/5	05.03.2010	Risto Ikonen
J313107	Ainepedagogiset perusprosessit	3,00	5/5	14.12.2010	Lenni Haapasalo
J313109	Ainepedagoginen tutkimuspraktikum (peda hum,mat, luonn, teo)	3,00	4/5	16.05.2011	Lenni Haapasalo
2510050a	Opetushallinto ja johtaminen, luennot ja kirjalisuus	2,00	HYV	31.10.2011	Petri Salo
2510050b	Opetushallinto ja johtaminen, seminaari	1,00	HYV	18.10.2011	Harjoittelukoulut Joensuussa (J)
3010500	Muut tutkintoon sisältyvät opinnot	57,00 *	HYV	28.02.2013	Luonnontiet. ja metsätiet. tdn yhteiset (J,K)
3311014	Suhteellisuusteoriaa	4,00	5/5	16.12.2010	Kai-Erik Peiponen
3315139	Maisterin tutkinnon hops	1,00	HYV	28.02.2013	Risto Korhonen
3317191	Differentiaaligeometria	8,00	3/5	11.05.2012	Samuli Piipponen
3317321	Osittaisdifferentiaaliyhtälöt	8,00	4/5	13.05.2011	Jukka Tuomela

Juha-Matti Aleksanteri Huusko

Syntymäaika 20.04.1987
Opiskelijanumero 175783

OPINNOT		OP	ARV	PVM	HYVÄKSYJÄ
J150103	Kemian perusteet	5,00	5/5	14.04.2008	Tuure-Pekka Jauhiainen
J150306	Fysikaalinen kemia I	6,00	4/5	06.03.2009	Tapani Pakkanen
J150307	Fysikaalinen kemia II	3,00	2/5	24.04.2009	Tapani Venäläinen
J150335	Orgaaninen spektroskopia	2,00	4/5	08.05.2009	Tuure-Pekka Jauhiainen
J180206	Todennäköisyyslaskenta Ib	4,00	5/5	05.05.2009	Pekka Smolander
J180661	Lukuteoria	8,00	5/5	11.05.2010	Visa Latvala
J190207	Mekaniikan jatkokurssi	5,00	5/5	17.12.2009	Arto Passoja
J700334	Opiskelijatuutorointi	3,00	HYV	11.12.2008	Visa Latvala

Tutkintoon suoritetut opinnot 202,00

* Lasketaan yhteismäärään
** Hyväksiluettu

Allekirjoittaja

Aino Eskelinen
osastosihteeri

ITÄ-SUOMEN YLIOPISTO

Opintosuoritusten arvostelu

5/5 = erinomainen
4/5 = kiitettävä
3/5 = hyvä
2/5 = tyydyttävä
1/5 = välttävä
tai HYV = hyväksytty

Toisen kotimaisen kielen hyväksytty taito arvostellaan asteikolla tyydyttävä taito (T) tai hyvä taito (H). Toisen kotimaisen kielen numeerinen arvostelu sijoittuu asteikolla seuraavasti: 1-3 = tyydyttävä taito (T), 4-5 = hyvä taito (H).

Tutkielmien ja väitöskirjan arvostelu

L = laudatur
ECL = eximia cum laude approbatur
MCL = magna cum laude approbatur
CL = cum laude approbatur
NSA = non sine laude approbatur
LA = lubenter approbatur
A = approbatur
tai
khyv kiittäen hyväksytty
hyv hyväksytty
tai
K/E kiitettävä/erinomainen
H hyvä
T tyydyttävä
V välttävä

Opintojen mitoituksen peruste on opintopiste. Yhden lukuvuoden opintojen suorittamiseen keskimäärin vaadittava 1 600 tunnin työpanos vastaa 60 opintopistettä.

Perusopintojen laajuus on vähintään 25 opintopistettä. Aineopintojen laajuus on yhdessä perusopintojen kanssa vähintään 60 opintopistettä. Syventävien opintojen laajuus on vähintään 60 opintopistettä.

Juha-Matti Aleksanteri Huusko
Ahovaarantie 372
88900 KUHMO

Date of birth	20.04.1987
Student number	175783
Registered	01.08.2007

STUDY RIGHTS

Admitted by	Faculty of Science and Forestry
Organisation	Physics and Mathematics(J)
Valid	01.08.2007 - 20.09.2013
Starting Date	16.02.2013
Decree	Government Decree on University Degrees 794/2004
Scope of Studies	Master of Science
Major	Mathematics
Orientation	Subject Teacher
Minor	Physics Subject Teacher's Pedagogical Studies
Graduation Date	20.09.2013
Thesis, Advanced Studies	Bergmanin avaruuden funktioiden nollakohdista
Grade	Very good
Date	20.09.2013

Courses completed: 14.04.2008 - 20.09.2013

COURSES		CREDIT POINTS	GRADE	DATE	INSTRUCTOR
70287	Master of Science	202,00	Pass	20.09.2013	Faculty of Science and Forestry
0510	Mathematics	72,00 *	4/5	20.09.2013	Risto Korhonen
3319140	Mathematics (Subject Teacher, Advanced Studies)	72,00	4/5	20.09.2013	Risto Korhonen
3317491	Master's Thesis (Mathematics)	30,00	4/5	20.09.2013	Faculty of Science and Forestry
3317222	History of Mathematics	4,00	5/5	12.05.2011	Heli Silvennoinen
3317242	Mathematical Demonstrations and Club Activities	6,00	Pass	23.05.2011	Martti Pesonen
3317493	Master's Maturity Test		Pass	18.09.2013	Jouni Rättyä
J180501	Analysis IV	8,00	4/5	21.04.2010	Rauno Aulaskari
J180511	Geometry	8,00	4/5	15.05.2009	Visa Latvala
J180551	School Mathematics	4,00	Pass	30.04.2010	Heli Silvennoinen
J180603	Complex Analysis Ia	4,00	5/5	04.11.2009	Jouni Rättyä
J180604	Complex Analysis Ib	4,00	3/5	16.12.2009	Jouni Rättyä
J180721	Mathematical Computing in Schools	4,00	Pass	25.03.2010	Heli Silvennoinen
0520	Physics	38,00 *	5/5	30.08.2013	Markku Kuittinen

Juha-Matti Aleksanteri Huusko

Date of birth 20.04.1987
Student number 175783

COURSES		CREDIT POINTS	GRADE	DATE	INSTRUCTOR
3314320	Physics, Intermediate Studies, Subject Teacher, Minor Subject	38,00	5/5	30.08.2013	Markku Kuittinen
3311001	Laboratory Practice I	5,00	5/5	30.08.2013	Martti Mäkinen
3312034	Planning and Realization of a Workshop for SciFest	5,00	Pass	21.05.2012	Pekka Hirvonen
J190202	Electromagnetism	7,00	5/5	15.05.2009	Markku Saarelainen
J190206	Optics	7,00	5/5	14.12.2009	Markku Kuittinen
J190301	Quantum and Atomic Physics	6,00	5/5	21.12.2009	Pasi Vahimaa
J190404	Experimental physics for schools	5,00	5/5	27.05.2009	Ville Nivalainen
J190541	Basic laboratory practice for teachers	3,00	Pass	16.02.2009	Pekka Hirvonen
2008	Subject Teacher's Pedagogical Studies	35,00 *	5/5	17.05.2013	Pertti Väisänen
2320560	TEACHERS PEDAGOGIGAL STUDIES (35 op)	35,00	5/5	17.05.2013	Pertti Väisänen
2320503	The Teacher's Professional Competence in Interaction	3,00	Pass	05.12.2011	Kirsi Heikkinen-Jokilahti
2320505	Applied Teaching Practice	4,00	Pass	07.02.2013	Kari Sormunen
2320506	Integrating Pedagogy	3,00	5/5	15.05.2013	Kari Sormunen
2510012	Basic Teaching Practice	5,00	Pass	14.12.2012	Seija Jeskanen
2510022	Advanced Teaching Practice	8,00	Pass	17.05.2013	Seija Jeskanen
J312201	Pedagogical Ethics	3,00	5/5	05.03.2010	Risto Ikonen
J313107	Teaching and Learning Processes in Subject Pedagogy	3,00	5/5	14.12.2010	Lenni Haapasalo
J313109	Research in Subject Pedagogy	3,00	4/5	16.05.2011	Lenni Haapasalo
2510050a	Administration and Leading in Education, lectures and literature	2,00	Pass	31.10.2011	Petri Salo
2510050b	Administration and Leading in Education, seminar	1,00	Pass	18.10.2011	University Teacher Training Schools in Joensuu (J)
3010500	Other studies included in degree	57,00 *	Pass	28.02.2013	Faculty of Science and Forestry, shared activities (J,K)
3311014	Theory of relativity	4,00	5/5	16.12.2010	Kai-Erik Peiponen
3315139	Study Planning	1,00	Pass	28.02.2013	Risto Korhonen
3317191	Differential Geometry	8,00	3/5	11.05.2012	Samuli Piipponen
3317321	Partial Differential Equations	8,00	4/5	13.05.2011	Jukka Tuomela
J150103	Basic Chemistry	5,00	5/5	14.04.2008	Tuure-Pekka Jauhiainen
J150306	Physical Chemistry I	6,00	4/5	06.03.2009	Tapani Pakkanen
J150307	Physical Chemistry II	3,00	2/5	24.04.2009	Tapani Venäläinen
J150335	Organic Spectroscopy	2,00	4/5	08.05.2009	Tuure-Pekka Jauhiainen
J180206	Probability Theory Ib	4,00	5/5	05.05.2009	Pekka Smolander

24.09.2013

Juha-Matti Aleksanteri Huusko

Date of birth 20.04.1987
Student number 175783

COURSES		CREDIT POINTS	GRADE	DATE	INSTRUCTOR
J180661	Number Theory	8,00	5/5	11.05.2010	Visa Latvala
J190207	Advanced Mechanics	5,00	5/5	17.12.2009	Arto Passoja
J700334	Tutoring	3,00	Pass	11.12.2008	Visa Latvala

Studies included in the degree 202,00

* Counted in the studies included in the degree
** Completed at another institution

Signature of the Registrar

Aino Eskelinen
Administrative Officer

UNIVERSITY OF EASTERN FINLAND

Explanation of Transcript Grading Systems:

5/5 Excellent
4/5 Very good
3/5 Good
2/5 Satisfactory
1/5 Sufficient
Pass Course completed successfully

Approved courses in the Second Domestic Language (Swedish or Finnish) are graded with the scale satisfactory (T) - good (H). The numerical grading scale of the Second Domestic Language is the following: 1-3 = satisfactory (T), 4-5 = good (H).

Grading of thesis and dissertation:

L laudatur
ECL eximia cum laude approbatur
MCL magna cum laude approbatur
CL cum laude approbatur
NSA non sine laude approbatur
LA lubenter approbatur
A approbatur
or
AppD Approved with Distinction
App Approved
or
K/E Excellent
H Good
T Satisfactory
V Sufficient

The measure for the extent of studies shall be a credit point. The average input of 1600 working hours needed for studies of one academic year shall correspond to 60 credits.

The combined extent of basic and intermediate studies shall be a minimum of 60 credits.

UNIVERSITY OF
EASTERN FINLAND

DIPLOMA SUPPLEMENT

This Diploma Supplement follows the model developed by the European Commission, Council of Europe and UNESCO/CEPES. The purpose of this supplement is to provide sufficient independent data to improve the international 'transparency' and fair academic and professional recognition of qualifications (diplomas, degrees, certificates, etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It should be free of any value-judgements, equivalence statements or suggestions about recognition. Information should be provided in all eight sections. Where information is not provided, a reason should be given.

1 INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

1.1 Family name(s):	Huusko
1.2 Given name(s):	Juha-Matti Aleksanteri
1.3 Date of birth (day/month/year):	20.04.1987
1.4 Student identification number or code:	175783

2 INFORMATION IDENTIFYING THE QUALIFICATION

2.1 Name of qualification and title conferred (in original language):	Filosofian maisteri (Master of Science)
2.2 Main field(s) of study for the qualification:	Mathematics
2.3 Name and status of awarding institution (in original language):	Itä-Suomen yliopisto / Luonnontieteiden ja metsätieteiden tiedekunta (University of Eastern Finland / Faculty of Science and Forestry), state recognised university, Decree on Higher Education Degree Structure 464/1998. The quality assurance system of the university has passed the audit conducted by the Finnish Higher Education Evaluation Council. The auditing certificate is valid for six years (until 24.3.2017).
2.4 Name and status of institution (if different from 2.3) administering studies:	Not applicable
2.5 Language(s) of instruction/examination:	Finnish

3 INFORMATION ON THE LEVEL OF THE QUALIFICATION

3.1 Level of qualification:	Second-cycle university degree. See 8.
3.2 Official length of programme:	The degree consists of at least 120 credits, 2 years of full-time study. Finnish credits are fully compatible with the ECTS.
3.3 Access requirement(s):	The admission requirement for the second-cycle university degree is a first-cycle degree (See 8.1.1.).

4 INFORMATION ON THE CONTENTS AND RESULTS GAINED

4.1 Mode of study:	Full-time
4.2 Programme requirements:	The education shall provide the student with: (1) good overall knowledge of the major subject or a corresponding entity and conversance with the fundamentals of the minor subject or good

DIPLOMA SUPPLEMENT

knowledge of the advanced studies included in the degree programme;
(2) knowledge and skills needed to apply scientific knowledge and scientific methods or knowledge and skills needed for independent and demanding artistic work;
(3) knowledge and skills needed for independently operating as an expert and developer of the field;
(4) knowledge and skills needed for scientific or artistic postgraduate education; and
(5) good language and communication skills.
The education shall be based on scientific research or artistic activity and professional practices in the field.

4.3 Programme details (e.g., modules or units studied), and the individual grades/marks/credits obtained
(if this information is available on an official transcript this should be used here.):

See transcript of records.

4.4 Grading scheme and, if available, grade distribution guidance:

Study attainments are assessed on the scale pass-fail. Passed study attainments can also be assessed on the following grading scale: sufficient (1), satisfactory (2), good (3), very good (4), and excellent (5). Furthermore, theses completed in advanced studies, licentiate theses and doctoral dissertations can be graded on the following seven-stage scale: approbatur, lubenter approbatur, non sine laude approbatur, cum laude approbatur, magna cum laude approbatur, eximia cum laude approbatur and laudatur; or on the scale satisfactory, good and excellent; or on the scale pass and pass with distinction.

The assessment of language skills in the second domestic language uses the scale satisfactory-good; as laid down in the Act on the Knowledge of Languages Required of Personnel in Public Bodies (Laki julkisyhteisöjen henkilöstöltä vaadittavasta kielitaidosta 424/2003) and the Government Decree on the Demonstration of Language Skills in the Finnish and Swedish Languages in State Administration (Valtioneuvoston asetus suomen ja ruotsin kielen taidon osoittamisesta valtionhallinnossa 481/2003).

4.5 Overall classification of the qualification:

Not applicable

DIPLOMA SUPPLEMENT

5 INFORMATION ON THE FUNCTION OF THE QUALIFICATION

5.1 Access to further study:

Eligible for doctoral studies.
The admissions decisions are made in the receiving higher education institution.

5.2 Professional status:

Under the Finnish legislation, a person who has taken the degree of Master of Science is qualified for posts or positions in the public sector for which the qualification requirement is a second cycle higher education degree. In some cases, the qualification requirement also includes the completion of minor or major studies in certain specified fields of study.
In Finland, the teacher's profession is regulated by national legislation. The eligibility requirements for teaching posts and positions are stated in the Teaching Qualifications Decree (986/1998).
The degree (completed by Huusko, Juha-Matti Aleksanteri) is in compliance with the eligibility requirements for subject teachers. It qualifies the holder to provide subject teaching both in upper secondary education and in basic education (age group 7-19) in the following subjects: Physics, Mathematics.
The degree falls under the Article 11 of the Directive 2005/36/EC of the European Parliament and of the Council on the recognition of professional qualifications, level e.

6 ADDITIONAL INFORMATION

6.1 Additional information:

Joensuun yliopisto (University of Joensuu) and Kuopion yliopisto (University of Kuopio) have merged into Itä-Suomen yliopisto (University of Eastern Finland), as of 1.1.2010. Both Joensuun yliopisto and Kuopion yliopisto were state recognised universitites.

6.2 Further information sources:

www.uef.fi (University of Eastern Finland)
www.minedu.fi (Ministry of Education and Culture)
www.oph.fi (Finnish National Board of Education)

UNIVERSITY OF
EASTERN FINLAND

DIPLOMA SUPPLEMENT

7 CERTIFICATION OF THE SUPPLEMENT

7.1 Date: 20.09.2013

7.2 Name and signature:

Aino Eskelinen

7.3 Capacity: Aino Eskelinen
Administrative Officer

7.4 Official stamp or seal:

UNIVERSITY OF EASTERN FINLAND

8 INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

See next page.

8. INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

The Finnish education system consists of basic education, general and vocational upper secondary education, higher education and adult education. The basic education consists of a 9-year compulsory school for all children from 7 to 16 years of age.

Post-compulsory education is given by general upper secondary schools and vocational institutions. The general upper secondary school provides a 3-year general education curriculum, at the end of which the pupil takes the national Matriculation examination (ylioppilastutkinto / studentexamen). Vocational institutions provide 3-year programmes, which lead to upper secondary vocational qualifications (ammatillinen perustutkinto / yrkesinriktad grundexamen).

General eligibility for higher education is given by the Matriculation examination and the upper secondary vocational qualification. These qualifications require at least 12 years of schooling. Equivalent foreign qualifications also give general eligibility for higher education.

The Finnish higher education system comprises of universities (yliopisto / universitet) and polytechnics (ammattikorkeakoulu, AMK / yrkeshögskola, YH). All universities engage in both education and research and have the right to award doctorates. The polytechnics are multi-field institutions of professional higher education. Polytechnics engage in applied research and development. The polytechnics use the terms polytechnic or university of applied sciences when referring to themselves. This higher education system description uses the term polytechnic.

Higher education studies are measured in credits (opintopiste / studiepoäng). Study courses are quantified according to the work load required. One year of studies is equivalent to 1600 hours of student work on the average and is defined as 60 credits. The credit system complies with the European Credit Transfer and Accumulation System (ECTS).

8.1. University degrees

The Government Decree on University Degrees (794/2004) defines the objectives, extent and overall structure of degrees. The universities decide on the detailed contents and structure of the degrees they award. They also decide on their curricula and forms of instruction.

8.1.1. First-cycle university degree

The first-cycle university degree consists of at least 180 credits (3 years of full-time study). The degree is called kandidaatti / kandidat in all fields of study except Law (oikeusnotaari / rättsnotarie) and Pharmacy (farmaseutti / farmaceut). The determined English translation for all these degrees is Bachelor's degree, the most common degrees being the Bachelor of Arts or Bachelor of Science.

Studies leading to the degree provide the student with: (1) knowledge of the fundamentals of the major and minor subjects or corresponding study entities or studies included in the degree programme and the prerequisites for following developments in the field; (2) knowledge and skills needed for scientific thinking and the use of scientific methods or knowledge and skills needed for artistic work; (3) knowledge and skills needed for studies leading to a higher university degree and for continuous learning; (4) a capacity for applying the acquired knowledge and skills to work; and (5) adequate language and communication skills.

Studies leading to the degree may include: basic and intermediate studies; language and communication studies; interdisciplinary programmes; other studies and work practice for professional development. The degree includes a Bachelor's thesis (6 - 10 credits).

8.1.2. The second-cycle university degree

The second-cycle university degree consists of at least 120 credits (2 years of full-time study). The extent of studies required for a programme leading to the second cycle university degree which is geared towards foreign students is a minimum of 90 credits. The degree is usually called maisteri / magister. Other second-cycle degree titles are diplomi-insinööri / diplomingenjör (Technology), proviisori / provisor (Pharmacy) and arkkitehti / arkitekt (Architecture). The determined English translation for all these degrees is Master's degree, the most common degrees being the Master of Arts or Master of Science. The second-cycle university degree title in the fields of Medicine, Veterinary Medicine and Dentistry is lisensiaatti / licentiat, the English title being Licentiate. The admission requirement for the second-cycle university degree is a first-cycle degree.

In the fields of Medicine and Dentistry the university may arrange the education leading to the second-cycle university degree without including a first-cycle university degree in the education. In Medicine the degree consists of 360 credits (6 years of full-time study) and in Dentistry the degree consists of 300 credits (5 years of full-time study).

Studies leading to the second-cycle university degree provide the student with: (1) good overall knowledge of the major subject or a corresponding entity and conversance with the fundamentals of the minor subject or good knowledge of the advanced studies included in the degree programme; (2) knowledge and skills needed to apply scientific knowledge and scientific methods or knowledge and skills needed for independent and demanding artistic work; (3) knowledge and skills needed for independently operating as an expert and developer of the field; (4) knowledge and skills needed for scientific or artistic postgraduate education; and (5) good language and communication skills.

The studies leading to the second-cycle university degree may include: basic and intermediate studies and advanced studies; language and communication studies; interdisciplinary study programmes; other studies; and internship improving expertise. The degree includes a Master's thesis (20 - 40 credits).

8.2. Doctoral degrees

Students can apply for doctoral studies after the completion of a relevant second-cycle degree. The aim of doctoral studies is to provide student with an in-depth knowledge of their field of research and capabilities to produce novel scientific knowledge independently.

A pre-doctoral degree of lisensiaatti / licentiat (Licentiate) may be taken before the Doctor's degree and in general it takes 2 years of full-time study to complete.

The Doctor's degree takes approximately 4 years to complete after the second-cycle degree or 2 further years following the pre-doctoral degree. A student who has been admitted to complete the Doctor's degree must complete a given amount of studies, show independent and critical thinking in the field of research and write a Doctor's dissertation and defend it in public.

8.3. Polytechnic degrees

The government decree on polytechnics (352/2003 including amendments) defines the objectives, extent and overall structure of polytechnic degrees. The Ministry of Education and Culture confirms the degree programmes of polytechnics, and within the framework of these regulations, the polytechnics decide on the content and structure of their degrees in more detail. The polytechnics also decide on their annual curricula and forms of instruction.

8.3.1. First-cycle polytechnic degrees

The first-cycle polytechnic degree consists of 180, 210 or 240 credits (3 to 4 years of full-time study) depending on the study field. For specific reasons, the Ministry of Education and Culture may confirm the scope of the degree to exceed 240 credits. The first-cycle polytechnic degree is called ammattikorkeakoulututkinto / yrkeshögskoleexamen. The determined English translation for the degree is Bachelor's degree. The degree titles indicate the field of study, e.g. Bachelor of Engineering or Bachelor of Health Care.

Studies leading to the degree provide the student with (1) broad overall knowledge and skills with relevant theoretical background for working as expert of the field; (2) knowledge and skills needed for following and advancing developments in the field; (3) knowledge and skills needed for continuous learning; (4) adequate language and communication skills; and (5) knowledge and skills required in the field internationally.

The first-cycle polytechnic degree comprises basic and professional studies, elective studies, a practical training period and a Bachelor's thesis or a final project.

8.3.2. The second-cycle polytechnic degrees

The second-cycle polytechnic degree consists of 60 or 90 credits (1 or 1.5 years of full-time study). The degree is called ylempi ammattikorkeakoulututkinto / högre yrkeshögskoleexamen. The determined English translation for the second-cycle polytechnic degree is Master's degree. The degree titles indicate the field of study, e.g. Master of Culture and Art or Master of Business Administration. Eligibility for second-cycle polytechnic degrees is given by a relevant first-cycle degree with at least 3 years of relevant work or artistic experience.

Studies leading to the degree provide the student with (1) broad and advanced knowledge and skills for developing the professional field as well as the theoretical skills for working in demanding expert and leadership positions in the field; (2) profound understanding of the field, its relation to work life and society at large as well as the knowledge and skills needed for following and analysing both theoretical and professional developments in the field; (3) capacity for life-long learning and continuous development of one's own expertise (4) good language and communication skills required in work life; and (5) knowledge and skills needed to function and communicate in the field internationally.

The second-cycle polytechnic degree comprises advanced professional studies, elective studies and a final thesis or a final project.